Project Type: Implementation, New

Title: Field Crop and Vegetable IPM TAg Teams for Amish in SWNY

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Local Amish Leaders and Local Agribusinesses serving the Amish Community

Abstract:
Tactical Agriculture Teams (TAg) are learning groups consisting of growers, agri-business personnel and extension field staff who meet over the course of the season to share information about Integrated Pest Management (IPM) principles and practices. TAg Teams allow hands-on observation and training, and are effective tools for teaching IPM and improved crop cultural practices. The demand and market for fresh vegetables in Cattaraugus and Chautauqua Counties has prompted some Amish farms to convert some of their field crop acreage to fresh vegetable production. This has created a need for these farms to understand production and pest management practices for both field crops and vegetable crops. It has also created the challenge of balancing field crop production requirements with the enhanced income potential from fresh market vegetable production for the farm.

Background and Justification:
The establishment of a local produce auction, expansion of farmers' markets, and success of roadside stands in Chautauqua and Cattaraugus Counties has raised the interest of Amish farmers along the border of these two counties in vegetable production. Several farms have taken a portion of their land that was in field crop production and started raising fresh market vegetables. This has presented two challenges to these farms. First, they have limited experience in growing vegetables commercially, creating the need for training on cultural and pest management practices on a variety of vegetable crops. Secondly, they need to make sure they have enough production from their field crops to meet the needs of the farm with reduced field crop acreage.

These Amish farmers have been seeking information to help with these two concerns from several sources including Agribusinesses, Cornell Cooperative Extension, and other producers. The structure of Tactical Agriculture Teams (TAg) brings these three groups together in an effective teaching and learning setting. TAg Teams focus on the principles of Integrated Pest Management (IPM). These practices can address both concerns for this group of producers. IPM and TAg will give hands-on training in field crop and vegetable

production and pest management. TAg Teams and IPM principles will help these farms produce high-quality vegetables with minimum costs and minimal environmental impact while successfully balancing the field crop production requirements with the enhanced income potential from fresh market vegetable production for the farm. Additionally, hiring a scout for these farms will enhance the overall extension program and reinforce the IPM principles and concepts at TAg Meetings.

Objectives:

1. To establish a TAg Team of approximately ten Amish growing field crops and vegetable crops (or considering growing vegetable crops) on the Cattaraugus/Chautauqua County border to meet five times over the growing season.
2. Encourage growers to take soil samples to analyze nutrient levels on both field crop fields and vegetable fields.
3. Provide suitable reference materials for both field crop and vegetable production.
4. To collect scouting data for each grower's farm to provide to the grower. Scouting data will be summarized and published in "Field Crop Memo" a semi-monthly crop newsletter going out to Allegany, Cattaraugus, and Chautauqua Counties. Information will also be sent to the regional livestock/field crops and vegetable IPM educators to be used in other newsletters and web publications.
5. To evaluate the educational materials and the on-farm classroom setting using surveys and pre and post oral interviews.

Procedures:

In May 2006, an on-farm meeting was held to introduce the program to the local Amish Community. Twenty nine Amish farmers attended that meeting where we discussed the principles of Integrated Pest Management (IPM), soil health, and TAg Teams. At this meeting, we did hands-on field crop scouting for early season pest in corn, haycrops, and small grains. We also discussed early season scouting for vegetables. Participants were asked if they would like to be part of a field crop/vegetable TAg Team and attend regular meetings throughout the season and have a scout regularly check their fields. Eight of the participants signed up to participate. Three were already growing vegetable crops (other than sweet corn) and field crops, and five were only growing field crops but had an interest in vegetable production. See Table 1 for crop acreages.

Table 1: Crop Acreage of Participating Farms

Crop	# of Farms Growing	Total Acres
Alfalfa	1	15
Field Corn	7	100
Mixed Hay	8	250
Oats	8	75
Pasture	8	200
Sweet Corn	5	30
Mixed Vegetables*	3	25

* Mixed vegetables included: beans, cucumbers, melons, peas, potatoes, pumpkins, and squash.

Over the course of the growing season, the scout visited each farm every ten to twelve days and seven on-farm group meetings were held. TAg Meeting topics were: Early season field corn and hay, Sweet corn pests, Flies in the barn, Vegetable diseases (ie. powdery mildew on cucurbits, tomato foliar diseases), Field corn pests, and Weeds in hay. Specific pest topics were adjusted based on problems observed by TAg Team participants and by the team scout. The scout also took soil samples from a field on each participating farm. One-on-one meetings were held with each farm to go over the soil samples and make recommendations for next year. A "wrap-up" meeting was held in October to answer any outstanding questions and to evaluate the program. All eight farms said they would participate in a similar program in the future, and seven of the eight said they would recommend the program to others.

Results and Discussion:

The culture of this Amish community precludes the use of written pre and post-test evaluations. Oral interviews and observations by the project leaders and cooperators were used to estimate participants' knowledge levels at the beginning and end of the programs. It is estimated that all participants raised their level of understanding of IPM and ICM (integrated crop management) principles from a low to moderate understanding to a high level of understanding.

As a result of these efforts, all eight farms now have a better understanding of not only IPM principles for pest control but of overall field crop and vegetable production practices. Five of the farms had never soil tested before and plan to do more regular testing. Going into this program, only two of the farms did any regular scouting for pests and none of them had written pest records from year to year. As a result of this program, five farms are now keeping written pest records, and all farms plan on regularly scouting their crops next season. The five farms that did not grow vegetables this season all state that they now better understand the issues and challenges involved in vegetable crop production. They are looking into marketing opportunities and niche markets before proceeding further. See Table 2 for IPM/ICM practices that participants will do or try to do in the future.

One area that did stand out as needing more work was fly control in the barn. After the fly control workshop, a few farms started using fly baits with great success. However, they are putting the bait in less than ideal locations where the dead flies and spilled bait could be accessible to pets. Next year we will have a one-time workshop to build bait "traps" out of plastic gallon jugs to hang in the barns keeping the baits contained and out of reach. Building these "traps" was covered at the meeting; however, the Amish do not have plastic jugs readily available. Therefore, we will be providing the supplies.

Although only one producer grows a pure stand of alfalfa, he was experiencing hopper burn the week we had a meeting at a neighboring farm. The meeting moved to his farm, where we demonstrated scouting for Potato Leafhopper (PLH). The field was considerably over threshold. Treatment option, including early cutting and PLH resistant alfalfa were discussed. This grower repeated at this meeting and at later meetings that he now will be more vigilant about PLH scouting, and he will likely seek out seed of a PLH

resistant variety. Producers that are growing alfalfa in a mixed stand are also looking into PLH resistant varieties to enhance stand longevity in those fields.

Table 2: Planned implementation of IPM/ICM principles by program participants.

	percent of participants who:		
IPM/ICM Practices	Will do	Will try	Will not do
Use IPM practices for fly control in the barn	4	4	0
Perform stand counts	5	3	0
Conduct spring and fall weed identification and surveys	6	2	0
Monitor for weed escapes from herbicides	8	0	0
Scout for diseases in vegetables	3	0	0
Time herbicide treatments carefully based on plant growth stage	5	3	0
Time fungicide treatments carefully based on plant growth stages and presence of diseases	3	5	0
Time insecticide treatments based on plant growth stages and threshold numbers of insects, and take weather conditions into consideration	6	2	0
Use economic thresholds to guide insect and disease management decisions	4	4	0
Make pest management decisions based on stand health, growth stage, and yield potential	7	1	0
Keep scouting records, records of management decisions, and records of management actions	5	1	2
Use threshold tables and guidelines	4	4	0
Prepare IPM scouting plan before the growing season begins	2	4	2
Collect reference material to help plan your IPM program	5	1	2
Consult your extension educator or IPM educator for new information	6	2	0
Conduct soil testing to determine proper fertilization needs	5	3	0
Use crop rotation to control weeds and diseases	4	2	2
Review the soil test results with your CCE Educator	5	3	0

Notes: all of these farms use cultivation in their weed control strategy and monitor for weed escapes. The two farms that say they will not keep records, both feel they have few fields and can remember the history without writing anything down. These are also the farms that do not plan on collecting reference materials or preparing a scouting plan. The two farms that will not use crop rotations are both vegetable farms with small acreage that don't feel they have the space available to rotate as they would like.

Project Locations:
Cattaraugus County and Chautauqua County